

Claims:

1. A baton for cooperation with an electronic tone generation system to produce different audible sounds in response to different movements of the baton, comprising:

    a housing having an end portion grippable by a user's hand for movement in a plane between at least a first free position and a second surface engaging position;

    a motion sensor carried in said housing a spaced distance from said end portion for producing an electromagnetic signal in response to said movements; and

    a signal processor carried in said housing for cooperating with said motion sensor to produce a transmittable play signal corresponding to movement of the baton to said first position and a transmittable mute signal corresponding to movement to said second position;

    whereby the user is able to produce either full or muted sounds by moving the baton between said first and second positions.

2. A baton according to claim 1, wherein said motion sensor and signal processor cooperate to permit the baton to produce a transmittable play signal only when said baton is moved substantially in said plane of movement.

3. A baton according to claim 2, wherein said motion sensor includes a piezoelectric reed which is mounted in said housing to flex about an axis transverse to said plane of movement.

4. A baton according to claim 3, wherein said baton includes visible indicia means carried on said housing for providing the user with information on the proper orientation of the baton with its desired plane of movement.

5. A baton according to claim 4, wherein said transmittable play signal corresponds to a sound made by a musical instrument, and said transmittable mute signal corresponds to a sound made by a musical instrument when muted.

6. A baton according to claim 1, wherein said baton carries a rechargeable battery in said housing end portion and a recharging port adjacent said battery.

7. A baton according to claim 6, wherein said baton housing carries a visible light source remote from said end portion to indicate the level of charge of said battery.

8. A baton according to claim 7, including a charging stand for supporting a plurality of said batons upright in rows to enable the level of charge of individual batons in said plurality to be determined visually at a glance.

9. A wireless handheld baton for communicating with a receiver of an electronic tone generation system that produces audible sounds in response to movements of the baton, comprising:

    a housing having a grippable end portion;

    a motion sensor carried in said housing a spaced distance from said end portion for generating an electromagnetic waveform signal in response to movements of the baton, said motion sensor generating waveforms of different shapes that are produced as a function of baton orientation and direction of movement; and

    a signal processor and transmitter carried in said housing for receiving said electromagnetic waveform signal from said motion sensor and for selectively transmitting a wireless electromagnetic signal from the baton to the receiver of the electronic tone generation system to produce an audible sound only when said electromagnetic waveform signal is within a predetermined range of waveform shapes.

10. A baton according to claim 9, wherein said motion sensor generates electromagnetic waveform signals having alternating polarity.

11. A baton according to claim 9, wherein said motion sensor is a piezoelectric reed that flexes in forward and rearward directions about an axis within said housing.

12. A baton according to claim 11, wherein said piezoelectric reed generates an electromagnetic waveform signal that is within said predetermined range of waveform shapes only when said baton is moved in a plane of movement transverse to said axis of said piezoelectric reed.

13. A baton according to claim 11, wherein said piezoelectric reed generates an electromagnetic waveform signal that is within said predetermined range of waveform shapes only when said baton is moved in a plane of movement substantially perpendicular to said axis of said piezoelectric reed.

14. A baton according to claim 13, wherein said baton includes indicia at a predetermined location on said housing for providing information with respect to proper orientation of the baton within said plane of movement, and wherein said piezoelectric reed generates an electromagnetic waveform signal that is within said predetermined range of waveform shapes only when said baton is moved in said plane of movement with said baton in said proper orientation.

15. A baton according to claim 11, wherein said predetermined range of waveform shapes includes a waveform with alternating polarity that includes a section extending beyond a first minimum threshold value for greater than a predetermined period of time.

16. A baton according to claim 15, wherein said amplitude of said section of said waveform determines a relative volume level of the audible sound produced in response to movement of the baton.

17. A baton according to claim 15, wherein said first minimum threshold value has a predetermined polarity.

18. A baton according to claim 17, wherein said transmitter transmits an instantaneous mute signal when said electromagnetic waveform signal includes a section that extends beyond a second predefined minimum threshold value for less than a predetermined period of time, said second predefined minimum threshold value being of opposite polarity relative to said first minimum threshold value.

19. An electronic tone generation system, comprising:  
a plurality of separate handheld batons each capable of wireless communication with a receiver that generates an output signal;

said batons each having a housing with a grippable end portion and a motion sensor carried in said housing a spaced distance from said end portion, said motion sensor generating an electromagnetic waveform signal having alternating polarity in response to movements of the baton, said motion sensor generating different waveforms depending upon baton orientation and direction of movement; and

    said batons each having a signal processor and transmitter carried in said housing for receiving said electromagnetic waveform signal from said motion sensor and for selectively effecting said wireless transmission to said receiver to produce an audible sound only when a section of said electromagnetic waveform signal has a predetermined polarity and extends above a first threshold value for at least a predetermined period of time.

20. An electronic tone generation system according to claim 19, wherein said motion sensor of each of said batons is a piezoelectric reed that flexes about an axis, and wherein a section of said electromagnetic waveform signal that has said predetermined polarity and that extends above said first threshold value for at least said predetermined period of time is obtained only when said baton is moved in a plane of movement substantially perpendicular to said axis of said piezoelectric reed.

21. An electronic tone generation system according to claim 20, wherein said housing of each of said batons includes indicia on a predetermined location thereof for providing information with respect to proper orientation of the baton within said plane of movement, and wherein a section of said electromagnetic waveform signal that has said predetermined polarity and that extends above said first threshold value for at least said predetermined period of time is obtained only when said baton is moved in said plane of movement with said baton in said proper orientation.

22. An electronic tone generation system according to claim 19, wherein said transmitter transmits an instantaneous mute signal when said electromagnetic waveform signal includes a section that extends beyond a second predefined minimum threshold value for less than a predetermined period of time, said second predefined minimum threshold value being of opposite polarity relative to said first threshold value.

23. An electronic tone generation system according to claim 19, wherein each baton has a unique identification code, and wherein each transmitter includes information concerning said identification code of said baton in each wireless transmission.

24. An electronic tone generation system according to claim 23, wherein each baton includes a set of DIP switches for setting said identification code.

25. An electronic tone generation system according to claim 23, wherein each baton has a microprocessor, wherein said transmitter of each baton is a transceiver that enables said transmitter to operate in a "listen before speak" mode to avoid interference with other transmitters, and wherein, when a wireless transmission is received by said transceiver during said listen before speak mode, a delay time for transmitting a wireless transmission is determined by said microprocessor as a function of the identification code of said received transmission.

26. An electronic tone generation system according to claim 19, wherein said output signal generated by said receiver is a MIDI output signal.

27. An electronic tone generation system according to claim 19, further comprising a MIDI tone generator, amplifier and at least one speaker for producing an audible sound from said MIDI output signal.

28. An electronic tone generation system according to claim 19, wherein different batons are capable of being pre-set to produce different audible sounds.